DVD Piracy: It *Can* Be Done

by Andy Patrizio

1:20 p.m. 1.Nov.1999 PST

The worst fear of movie studios has been realized: DVD movie encryption has been broken.

A utility called DeCSS is currently floating around on the Net that will read a DVD movie disc and save the file on a hard disk, minus the encryption. All that's required is a DVD-ROM drive -- since CD-ROM drives can't read the 4.7GB DVD movie discs -- and a lot of disc space. The faster the CPU, the faster it will process the file. It takes around 10 minutes to process a .VOB file on a 500MHz Pentium III.

The hack opens up illicit online trading of DVD movies, although minus DVD-ROM's interactive elements and outstanding audio/visual quality.

The utility, written by two European programmers requesting anonymity, uses DVD playback code found in software-based DVD playback utilities, like WinDVD, ATI DVD from ATI Technologies, and XingDVD. Every player has a DVD copy protection decoder for playback, just like the hardware decoder in DVD players from Toshiba, Sony, and other consumer electronics devices.

One programmer who examined DeCSS said the utility emulates that same playback code. But instead of displaying the video and audio to screen, it simply saves it back to the disk without encryption, since there is no encryption in playback. "The bottom line is, if you have a decoder, it has to execute somewhere. And that's always been the weak link, where you can get at the encrypted material," said David Moskowitz, president of Productivity Solutions, from King of Prussia, Pennsylvania.

Getting the decryption code, as it turns out, is relatively easy. Using an in-circuit emulator -- a device used to monitor hardware activity -- Moskowitz was able to watch exactly what the DVD hardware does in decrypting the movie on his PC. "With that information, it's no big deal to create the [cracking] application," he said.

One programmer who had a peripheral involvement in DeCSS development thinks piracy from this utility is a non-issue. "There have been DVD ripping tools available for months," said Derek Fawcus, a programmer in England. "Among the things you can find are explicit instructions and software for making VCD copies of DVDs. DeCSS is simply the latest in a line of methods of doing this."

Some of the DVD decoder assembler code was released on the Internet, and Fawcus rewrote it in C code. That code was later used in DeCSS.

Once decrypted, the DVD movie files, which have a .VOB extension, are too big to fit on a CD-ROM. Most .VOB video files are 1 GB in size, and a movie will be in three or four files. But there are many DVD conversion utilities floating around on DVD ripping sites, like DVDigest. It has conversion tools, like DVD2MPG and VOBSplit, which can be used to convert a DVD movie into VCD format, which can fit on a CD-ROM disc. There are even sites dedicated to converting DVDs to VCD format.

This means losing the interactivity of DVD-ROM and its tremendous sound and video quality, but it also means VCDs can be played on CD-ROM drives. It also makes it easier to trade the movie online. Movie piracy has been a growing problem on the Internet, with films traded in MPEG and AVI format via Web sites and private file transfer sites. Movies in MPEG format are around 600 MB in size.

DVD supporters are not thrilled by the development. "It was like pulling teeth to get the major studios to all commit to standard DVD in the first place," said Jeff McNeal, webmaster of The Big Picture, a home theater enthusiast site. "I consider this a disturbing development and only hope that it doesn't curtail studio commitment to DVD as we know it today."